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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/392,626 09/09/99 MOGI

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EXAMINER

PHAM, H

ART UNIT

PAPER NUMBER

2861

DATE MAILED:

09/25/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/392,626

Applicant(s)

MOGI ET AL.

Examiner

Hai C Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on CPA Request (08/14/01) and Amendment (06/21/01)
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-57 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27-57 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 21 June 2001 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Continued Prosecution Application

1. The request filed on 08/14/01 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/392,626 is acceptable and a CPA has been established. An action on the CPA follows.

Drawings

2. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 06/21/01 have been approved.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claim 49 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 49:

- The following limitation "said light source unit further comprises an adjustment member for adjusting a relative position of said laser light source" appears to be vague in that it is not known with respect to *what reference* the adjustment of the position of the light source is performed. For the sake of completing the

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examination of the Application, the examiner will assume that the light source is adjusted with respect to the reference surface of the holder, as claimed in claim 57 until the Applicants say otherwise.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

6. Claims 27-30, 32, 34-39, 41, 43, 44 are rejected under 35 U.S.C. 102(a) as being anticipated by Asami (JP 10-244707.)

Regarding the base claims 27, and 37, Asami ('707) discloses an optical deflection-scan apparatus comprising a light source unit comprising a laser light source (1) and a driving circuit board (14) for driving said laser light source, said laser light source including a laser chip having a plurality of emission points (semiconductor laser chip 1 with two luminescent points P₁ and P₂, Figs. 2 and 4) for emitting laser beams and a terminal (1a) for energizing the laser chip, said driving circuit board being connected to the terminal (via the small substrate 15 or via a flexible cable [not shown]) (see English Translation, page 9, section 14) of said laser light source and having a longitudinal edge (driving circuit board 24 having a horizontal longitudinal edge, Fig. 6,) scanning means (polygon mirror 105, Fig. 8) for scanning a surface to be scanned with

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the laser beams emitted by said light source unit, and a housing (20, Fig. 6) having a wall with a longitudinal edge (upper edge parallel to the longitudinal edge of the driving circuit board,) wherein said housing contains said scanning means (the optical box being defined as the housing of the scanning apparatus and thus inherently supporting and enclosing the polygon mirror) and supports said light source unit on the wall (Figs. 6, 7,) and wherein said laser light source is fixed such that a straight line inclined with respect to the longitudinal edge of said driving circuit board passes the plurality of emission points (to adjust the spacing of the laser beams the small substrate connected to the laser light source is rotated without rotating the driving circuit board such that the line connecting the light emitting points P_1 and P_2 is inclined with respect to the horizontal line formed by the longitudinal edge of the driving circuit board, as shown in Fig. 5. See page 10, section 16 of the English translation.)

With regard to claim 28, Asami ('707) further the longitudinal edge of said driving circuit board being arranged substantially in parallel with the longitudinal edge of the wall of said housing (Fig. 6,)

As to claims 29 and 38, Asami ('707) teaches the driving circuit board having a substantially rectangular shape (Fig. 6.)

As to claims 30 and 39, Asami ('707) teaches the light source unit comprising a holder (21) holding the laser light source.

With regard to claims 32, 41, Asami ('707) teaches the plurality of emissions points (P_1 , P_2) of the laser light source being arranged linearly.

With regard to claims 34, 43, Asami ('707) also discloses the light source unit comprising a collimator lens (102, Fig. 8) for collimating the laser beams emitted from said laser light source and a lens barrel (113) holding said collimator lens, said lens barrel being integrated with said holder (Fig. 7.)

With regard to claims 35, 44, Asami ('707) teaches the laser light source being a multi-beam semiconductor laser.

With regard to claim 36, Asami ('707) also discloses the scanning means comprising a rotary polygon mirror (105) for deflecting the laser beams emitted by said light source unit and an imaging lens (106) for focusing the laser beams deflected by said rotary polygon mirror.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 31 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asami ('707) in view of Aoki (U.S. 5,408,493).

Asami ('707) discloses all the basic limitations of the claimed invention except for the laser array being fixed with an inclination with respect to a reference surface of the laser holder.

However, Aoki discloses a laser scanning apparatus in which the laser (6, Fig. 4B) has an angle adjusting holder (12) for adjusting an inclination angle with respect to the fixed plate (11) to obtain a desired point image position on the surface to be scanned.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Asami ('707) with the aforementioned teaching of Aoki. Doing so would allow the adjustment of the optical path of the laser beam to produce an image point at a desired position on the surface to be scanned.

9. Claims 33 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asami ('707) in view of Nakajima et al. (U.S. 5,999,345).

Asami ('707) discloses all the basic limitations of the claimed invention except for the multi-beam semiconductor laser having a plurality of two-dimensionally arrayed emission points.

However, it is well known in the art that the selection of one-dimensional or two-dimensional array lasers in an optical scanning device would be a matter of design choice to fit a specific requirement. Nakajima et al., for example, discloses a laser holder that can support a one-dimensional or two-dimensional laser array while allowing the adjustment of the distance between the multiple laser beams (Figs. 1, 3, 5 and 6).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the laser holder of Asami ('707) to hold a

plurality of two-dimensional laser arrays as taught by Nakajima et al. Doing so would allow to increase the printing speed of the laser printer. Moreover, the implementation of such laser holder would involve only routine skill in the art.

10. Claims 45-47, 50, 52-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asami ('707) in view of Sarraf (U.S. 4,993,801.)

With regard to claim 45, Asami ('707) further discloses at least three fixing members (a pair of screws 17 and the protruding pin 10a, Fig. 3) for fixing the light source unit to the housing and for restricting movement of the light source unit such that the plurality of emission points of the laser light source are located within a planar region defined by straight lines connecting respectively two of the three fixing members.

However, Asami ('707) fails to disclose all the three fixing members restricting movement of the light source unit toward the direction leaving the housing, although the two screws would amply prevent any movement of the laser light source with respect to the housing.

Regardless, Sarraf discloses an optical head (10) comprising a laser light source (12) being supported on a tubular support (16,) which is firmly fixed to the base (15) with three fixing members (three screws 23) such that the laser light source is located within a planar region defined by straight lines connecting respectively two of the three fixing members (Fig. 3.)

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide a set of three screws as fixing members as

taught by Sarraf in the device of Asami ('707). Doing so would firmly restrict any movement of the laser light source from the housing to which it is fixed.

With regard to claim 46, Asami ('707) also teaches the light source unit being rotatable for adjustment before it is fixed to said housing, the rotation center being located within the planar region defined by straight lines connecting respectively two of the three fixing members. (English Translation, page 7, section 9.)

With regard to claim 47, Asami ('707) also teaches the fixing members comprising a screw (17.)

With regard to claims 50, 52-56, please refer to paragraph 6 of the present Office action for their rejection.

11. Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Asami ('707) in view of Asami (JP 9-243944).

Asami ('707) discloses all the basic limitations of the claimed invention except for the fixing portion adhering with an adhesive and an adjustment member for adjusting a position of the multi-beam semiconductor laser.

However, Asami ('944) discloses an optical scanning device in which, in one embodiment, the laser holder (22, Fig. 2) is fixed to the optical box (11) with an adhesive, and, in another embodiment, the laser holder is fixed to the optical box through an adjustable structure (32, Fig. 3) to allow an adjustment of the position of the semiconductor laser (21).

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It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Asami ('707) with the aforementioned teachings of Asami ('944). Doing so would allow either to secure the laser source to the optical box after the adjustment or to flexibly adjust the position of the laser source whenever it is required.

12. Claims 49 and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asami ('707) in view of Sarraf, as applied to claims 45 and 52 above, and further in view of Aoki.

Asami ('707), as modified by Sarraf, discloses all the basic limitations of the claimed invention except for the laser array being adjusted and fixed with an inclination with respect to a reference surface of the laser holder.

However, Aoki discloses a laser scanning apparatus in which the laser (6, Fig. 4B) has an angle adjusting holder (12) for adjusting an inclination angle with respect to the fixed plate (11) to obtain a desired point image position on the surface to be scanned.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Asami ('707), as modified by Sarraf, with the aforementioned teaching of Aoki. Doing so would allow the adjustment of the optical path of the laser beam to produce an image point at a desired position on the surface to be scanned.

13. Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over Asami ('707) in view of Sarraf, as applied to claim 45 above, and further in view of Nakajima et al.

Asami ('707), as modified by Sarraf, discloses all the basic limitations of the claimed invention except for the multi-beam semiconductor laser having a plurality of two-dimensionally arrayed emission points.

However, it is well known in the art that the selection of one-dimensional or two-dimensional array lasers in an optical scanning device would be a matter of design choice to fit a specific requirement. Nakajima et al., for example, discloses a laser holder that can support a one-dimensional or two-dimensional laser array while allowing the adjustment of the distance between the multiple laser beams (Figs. 1, 3, 5 and 6).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the laser holder of Asami ('707), as modified by Sarraf, to hold a plurality of two-dimensional laser arrays as taught by Nakajima et al. Doing so would allow to increase the printing speed of the laser printer. Moreover, the implementation of such laser holder would involve only routine skill in the art.

Response to Arguments

14. Applicants' arguments filed 06/21/01 have been fully considered but they are not persuasive.

With respect to claims 27 and 37, which recite "said driving circuit board being connected to said terminal of said laser light source," a limitation which is inherent to

such structure involving a driving circuit board and its driven laser light source.

Moreover, it is not claimed that the connection is a *direct* connection between the driving circuit board and its driven laser light source. Asami ('707) discloses a laser light source connected to the driving circuit board via a small substrate (15) or via a flexible cable (not shown) (see English Translation, page 9, section 14) such that the laser beam spacing can be adjusted by rotating the laser light source unit without rotating the driving circuit board, and a straight line connecting the light emitting points would form an inclined line with respect to the longitudinal edge of the driving circuit board. On the other hand, such [direct] connection between the driving circuit board and its driven laser light source seems to be non-critical to the present invention since the Specification never discloses such feature. Since such connection is inherent to the structure of the optical head, claims 27 and 37 are not rejected under 35 U.S.C. 112, first paragraph, because of the lack of support by the Specification.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (703) 308-1281. The examiner can normally be reached on T-F (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le can be reached on (703) 308-0750. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3431 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

A handwritten signature in cursive script, appearing to read "H. C. Pham".

hcp
September 22, 2001